WHAT IS CLAIMED IS:

1. A method of producing natural gas from a well extending from ground surface into a subsurface production zone within a production formation, wherein:

(a) the wellbore is lined with a casing, said casing having perforations in the production zone;

(b) a tubing string extends through the casing and terminates adjacent to the production zone above the bottom of the wellbore; and

(c) said casing defines an annulus between the tubing and the casing, the bottoms of said annulus and casing being in fluid communication with the well bore;

said method comprising the steps of:

(d) determining a minimum total gas flow rate for the well;

(e) injecting a pressurized injection gas into an injection chamber selected from the annulus and tubing, so as to induce flow of a gas stream up a production chamber selected from the annulus and the tubing, said production chamber not being the injection chamber, said gas stream comprising a mixture of the injection gas and production gas entering the wellbore from the formation through the casing perforations;

(f) measuring the actual total gas flow rate in the production chamber;

(g) comparing the measured total gas flow rate to the minimum total flow rate;

(h) determining the minimum gas injection rate required to maintain the total flow rate at or above the minimum total flow rate, according to whether and by how much the measured total flow rate exceeds the minimum total flow rate; and

(i) adjusting the gas injection rate to a rate not less than the minimum gas injection rate.

2. The method of Claim 1 wherein the injection gas is a hydrocarbon gas.

3. The method of Claim 2 wherein the hydrocarbon gas is recirculated production gas from the well.

4. The method of Claim 1 wherein at least one of the steps of:

(a) measuring the actual total gas flow rate;

(b) comparing the measured total flow rate to the minimum total flow rate;

(c) determining a minimum gas injection rate; and

(d) adjusting the gas injection rate;

is repeated at selected time intervals.

5. The method of Claim 1 wherein the steps of:

(a) measuring the actual total gas flow rate;

(b) comparing the measured gas flow rate to the minimum total flow rate;

(c) determining a minimum gas injection rate; and

(d) adjusting the gas injection rate;

are carried out empirically in trial-and-error fashion by manual adjustment of a throttling valve adapted to regulate the gas injection rate.

6. The method of Claim 1 wherein the step of determining a minimum total flow rate is repeated at selected time intervals.

7. The method of Claim 1 used in association with a liquid loaded well, and further comprising the step of injecting gas into the well under sufficient pressure as to force a portion of the liquids accumulated in the bottom of the wellbore through the casing perforations and back into the formation.

8. An apparatus for use in producing natural gas from a well extending from ground surface into a subsurface production zone within a production formation, wherein:

(a) the wellbore is lined with a casing, said casing having perforations in the production zone;

(b) a tubing string extends through the casing and terminates adjacent to the production zone above the bottom of the wellbore; and

(c) said casing defines an annulus between the tubing and the casing, the bottoms of said annulus and casing being in fluid communication with the well bore;

said apparatus comprising:

(d) a gas compressor having a suction manifold and a discharge manifold;

(e) an upstream gas production pipeline having a first end connected in fluid communication with the upper end of a production chamber selected from the tubing and the annulus, and a second end connected in fluid communication with the suction manifold of the compressor;

(f) a downstream gas production pipeline having a first end connected in fluid communication with the discharge manifold;

(g) a gas injection pipeline having a first end connected to and in fluid communication with the production pipeline at a point downstream of the compressor, and a second end connected in fluid communication with an injection chamber selected from the tubing and the annulus, said injection chamber not being the production chamber; and

(h) a choke, for regulating the flow of gas in the injection pipeline.

9. The apparatus of Claim 8, further comprising a flow meter for measuring gas flow in the production chamber.

10. The apparatus of Claim 9, further comprising a flow controller associated with the flow meter, said flow controller having means for operating the choke.

11. The apparatus of Claim 10 wherein the flow controller is a pneumatically-actuated flow controller.

12. The apparatus of Claim 10 wherein the flow controller comprises a computer with a memory, and wherein:

(a) the flow controller is adapted to receive gas flow data from the flow meter, corresponding to total gas flow rates in the production chamber;

(b) the memory is adapted to store a minimum total flow rate;

(c) the computer is programmed to:

c.1 compare a total gas flow rate measured by the meter against the minimum total flow rate; and

c.2 determine a minimum gas injection rate necessary to maintain the total gas flow rate in the production chamber at or above the minimum total flow rate; and

(d) the flow controller is adapted to automatically set the choke to permit gas flow into the injection chamber at a rate not less than the minimum gas injection rate.

13. The apparatus of Claim 9 wherein the meter is installed in the production pipeline at a point downstream of the compressor.

14. The apparatus of Claim 9 wherein the meter is installed in the production pipeline at a point upstream of the compressor.

15. The apparatus of Claim 8 wherein the production chamber is the tubing, and the injection chamber is the annulus.

16. The apparatus of Claim 8 wherein the production chamber is the annulus, and the injection chamber is the tubing.

17. The apparatus of Claim 8, further comprising an oxygen sensor adapted to detect the presence of oxygen within the production pipeline and to automatically shut down the compressor upon so detecting oxygen.

18. The apparatus of Claim 8, further comprising a back-pressure valve in the production pipeline at a point downstream of the intersection between the gas injection pipeline and the production pipeline.

19. An apparatus for use in producing natural gas from a well extending from ground surface into a subsurface production zone within a production formation, wherein:

(a) the wellbore is lined with a casing, said casing having perforations in the production zone;

(b) a tubing string extends through the casing and terminates adjacent to the production zone above the bottom of the wellbore;

(c) said casing defines an annulus between the tubing and the casing, the bottoms of said annulus and casing being in fluid communication with the well bore; and

(d) a gas production pipeline is connected in fluid communication with the upper end of a production chamber selected from the tubing and the annulus;

said apparatus comprising:

(e) a gas injection pipeline having a first end in fluid communication with a source of pressurized injection gas, and a second end in fluid communication with an injection chamber selected from the tubing and the annulus, said injection chamber not being the production chamber;

(f) gas injection means, for pumping injection gas through the injection pipeline into the injection chamber; and

(g) a choke associated with the injection pipeline, for regulating the flow of gas in the injection pipeline.

20. The apparatus of Claim 19, further comprising a flow meter for measuring gas flow in the production chamber.

21. The apparatus of Claim 20, further comprising a flow controller associated with the flow meter, said flow controller having means for operating the choke.

22. The apparatus of Claim 21 wherein the flow controller is a pneumatically-actuated flow controller.

23. The apparatus of Claim 21 wherein the flow controller comprises a computer with a memory, and wherein:

(a) the flow controller is adapted to receive gas flow data from the meter, corresponding to total gas flow rates in the production chamber;

(b) the memory is adapted to store a minimum total flow rate;

(c) the computer is programmed to:

c.1 compare a total gas flow rate measured by the meter against the minimum total flow rate; and

c.2 determine a minimum gas injection rate necessary to maintain the total gas flow rate in the production chamber at or above the minimum total flow rate; and

(d) the flow controller is adapted to automatically set the choke to permit gas flow into the injection chamber at a rate not less than the minimum gas injection rate.

24. The apparatus of Claim 19 wherein the injection gas is a hydrocarbon gas.

25. The apparatus of Claim 19 wherein the injection gas is recirculated production gas from the well.

26. The apparatus of Claim 19 wherein the production chamber is the tubing, and the injection chamber is the annulus.

27. The apparatus of Claim 19 wherein the production chamber is the annulus, and the injection chamber is the tubing.

28. An apparatus for producing natural gas from a well extending from ground surface into a subsurface production zone within a production formation, wherein:

(a) the wellbore is lined with a casing, said casing having perforations in the production zone;

(b) a tubing string extends through the casing and terminates adjacent to the production zone above the bottom of the wellbore;

(c) said casing defines an annulus between the tubing and the casing, the bottoms of said annulus and casing being in fluid communication with the well bore; and

(d) a gas production pipeline is connected in fluid communication with the upper end of a production chamber selected from the tubing and the annulus;

said apparatus comprising:

(e) a gas injection pipeline having a first end connected in fluid communication with a source of pressurized injection gas, and a second end connected in fluid communication with an injection chamber selected from the tubing and the annulus, said injection chamber not being the production chamber; and

(f) a choke associated with the injection pipeline, for regulating the flow of gas in the injection pipeline.

29. The apparatus of Claim 28, further comprising a flow meter for measuring gas flow in the production chamber, and a flow controller associated with the flow meter, said flow controller having means for operating the choke.

30. The apparatus of Claim 29 wherein the flow controller is a pneumatically-actuated flow controller.

31. The apparatus of Claim 29 wherein the flow controller comprises a computer with a memory, and wherein:

(a) the flow controller is adapted to receive gas flow data from the meter, corresponding to total gas flow rates in the production chamber;

(b) the memory is adapted to store a minimum total flow rate;

(c) the computer is programmed to:

c.1 compare a total gas flow rate measured by the meter against the minimum total flow rate; and

c.2 determine a minimum gas injection rate necessary to maintain the total gas flow rate in the production chamber at or above the minimum total flow rate; and

(d) the flow controller is adapted to automatically set the choke to permit gas flow into the injection chamber at a rate not less than the minimum gas injection rate.

32. The method of Claim 28 wherein the injection gas is a hydrocarbon gas,

33. The apparatus of Claim 28 wherein the injection gas is recirculated production gas from the well.

34. The apparatus of Claim 28 wherein the production chamber is the tubing, and the injection chamber is the annulus.

35. The apparatus of Claim 28 wherein the production chamber is the annulus, and the injection chamber is the tubing.

36. The apparatus of Claim 28, further comprising an oxygen sensor adapted to detect the presence of oxygen within the production pipeline and to automatically shut down the compressor upon so detecting oxygen.

37. An apparatus for use in producing natural gas from a well extending from ground surface into a subsurface production zone within a production formation, wherein:

(a) the wellbore is lined with a casing, said casing having perforations in the production zone;

(b) a tubing string extends through the casing and terminates adjacent to the production zone above the bottom of the wellbore; and

(c) said casing defines an annulus between the tubing and the casing, the bottoms of said annulus and casing being in fluid communication with the well bore;

said apparatus comprising:

(d) a gas compressor having a suction manifold and a discharge manifold;

(e) an upstream gas production pipeline having a first end connected in fluid communication with the upper end of a production chamber selected from the tubing and the annulus, and a second end connected in fluid communication with the suction manifold of the compressor;

(f) a downstream gas production pipeline having a first end connected in fluid communication with the discharge manifold;

(g) an auxiliary pipeline having a first end connected in fluid communication with the production pipeline at a point upstream of the compressor, and a second end connected in fluid communication with the production pipeline at a point downstream of the compressor;

(h) a gas injection pipeline having a first end connected in fluid communication with the auxiliary pipeline, and a second end connected in fluid communication with an injection chamber selected from the tubing and the annulus, said injection chamber not being the production chamber;

(i) a choke mounted in the injection pipeline, for regulating the flow of gas in the injection pipeline;

(j) a first flow valve mounted in the auxiliary pipeline between the point where the auxiliary pipeline connects with the production pipeline upstream of the compressor and the point where the injection pipeline connects with the auxiliary pipeline; and

(k) a second flow valve mounted in the auxiliary pipeline between the point where the auxiliary pipeline connects with the production pipeline downstream of the compressor and the point where the injection pipeline connects with the auxiliary pipeline.

38. The apparatus of Claim 37, further comprising a flow meter for measuring gas flow in the production chamber, and a flow controller associated with the flow meter, said flow controller having means for operating the choke.

39. The apparatus of Claim 38 wherein the flow controller is a pneumatically-actuated flow controller.

40. The apparatus of Claim 38 wherein the flow controller comprises a computer with a memory, and wherein:

(a) the flow controller is adapted to receive gas flow data from the flow meter, corresponding to total gas flow rates in the production chamber;

(b) the memory is adapted to store a minimum total flow rate;

(c) the computer is programmed to:

c.1 compare a total gas flow rate measured by the meter against the minimum total flow rate; and

c.2 determine a minimum gas injection rate necessary to maintain the total gas flow rate in the production chamber at or above the minimum total flow rate; and

(d) the flow controller is adapted to automatically set the choke to permit gas flow into the injection chamber at a rate not less than the minimum gas injection rate.

41. The apparatus of Claim 38 wherein the meter is installed in the production pipeline at a point downstream of the compressor.

42. The apparatus of Claim 38 wherein the meter is installed in the production pipeline at a point upstream of the compressor.

43. The apparatus of Claim 37 wherein the production chamber is the tubing, and the injection chamber is the annulus.

44. The apparatus of Claim 37 wherein the production chamber is the annulus, and the injection chamber is the tubing.

45. The apparatus of Claim 37, further comprising an oxygen sensor adapted to detect the presence of oxygen within the production pipeline and to automatically shut down the compressor upon so detecting oxygen.